

CLAIMS

1. A method for surface treating a metal orthopedic prosthesis having a portion for implantation in bone comprising:

blasting at least the portion for implantation on bone with a chilled iron grit and thereafter leaching out any grit on the stem surface with acid.

2. The method as set forth in claim 1 wherein said iron grit is between 180 and 1190 microns in size.

3. The method as set forth in claim 1 wherein said acid treatment is in 20% nitric acid for 20 minutes at ambient temperature.

4. The method as set forth in claim 3 which includes using 20% dilute hydrochloric acid to remove any insoluble iron salts left after treatment with the nitric acid.

5. The method as set forth in claim 4 further including the application of ultrasonic agitation during the acid treatment.

6. The method as set forth in claim 1 wherein the blasting is with a G07 chilled iron grit at a pressure of 6.5 bar at 40 cubic meters per hour of air through a 9.5 mm nozzle and a 4.8 mm air jet.

7. The method as set forth in claim 6 which includes blasting with G12 chilled iron grit at 6.5 bar air pressure through a 9 mm nozzle before blasting with G07 grit.

8. The method as set forth in claim 7 wherein the blasting time or times is 3 to 4 minutes with a stand off distance of between 10 to 50 mm.

9. The method as set forth in claim 1 wherein at least two warm or cold water rinses are applied after the acid treatment.

10. A method of forming a roughened, decontaminated surface on a metal article which includes the single or multiple blasting of the surface with a chilled iron grit of appropriate roughness structure followed by acid pickling to produce a contamination free surface of substantially S_q 5 to 10 μm .

11. The method as set forth in claim 10 wherein the chilled iron grit has a roughness structure of between 180 to 1190 microns.

12. The method as set forth in claim 10 wherein said acid treatment is in 20% nitric acid for 20 minutes at ambient temperature.

13. The method as set forth in claim 12 which includes using 20% dilute hydrochloric acid to remove any insoluble iron salts left after treatment with the nitric acid.

14. The method as set forth in claim 12 further including the application of ultrasonic agitation during the acid treatment.

15. The method as set forth in claim 10 wherein the blasting is with a G07 chilled iron grit at a pressure of 6.5 bar at 40 cubic meters per hour of air through a 9.5 mm nozzle and a 4.8 mm air jet.

16. The method as set forth in claim 15 which includes blasting with G12 chilled iron grit at 6.5 bar air pressure through a 9 mm nozzle before blasting with G07 grit.

17. The method as set forth in claim 16 wherein the blasting time or times is 3 to 4 minutes with a stand off distance of between 10 to 50 mm.

18. The method as set forth in claim 10 wherein at least two warm or cold water rinses are applied after the acid pickling.

20. The method as set forth in claim 10 wherein the metal article is a prosthesis which has an insertion portion extending from an operative portion, and in which the roughened decontaminated surface is formed on the insertion portion.

21. The method as set forth in claim 20 which includes applying a protective cover to the operative portion.

22. The method as set forth in claim 10 wherein the metal is a titanium alloy.

23. A prosthetic titanium or titanium alloy implant comprising a bone contacting portion having a surface with an average surface roughness S_q of 5-10 μm , said surface being substantially free of aluminum and silicon contamination when measured by an EDAX elemental analysis.